CLAIMS

1   1-32.   (canceled)

1   33.   (currently amended) Signal processing apparatus comprising a signal amplifier and a

2   frequency converter which operate in succession on an input signal, and a lineariser which is provided

3   between the amplifier and the frequency converter to introduce a correction signal that is adapted to

4   make the overall input and output characteristic of the apparatus more linear by linearising both the

5   amplifier and frequency converter [[means]].

1   34.   (previously presented) Signal processing apparatus according to Claim 33, wherein a

2   feedback signal derived from the output of the apparatus is used by the lineariser to adapt the correction

3   signal.

1   35.   (previously presented) Signal processing apparatus according to Claim 34, further

2   comprising a pilot signal generator for introducing a pilot signal into the input signal prior to frequency

3   conversion and amplification, wherein the feedback signal contains distortion components from the pilot

4   signal produced by at least one of the frequency converter and the amplifier.

1   36.   (previously presented) A signal processing apparatus according to Claim 35, wherein

2   the pilot signal is one of a CW carrier signal, a full carrier AM signal, a suppressed carrier AM signal, a

3   single sideband signal, a quadrature amplitude modulated signal, a filtered quadrature phase shift keyed

4   signal, a direct sequence spread spectrum signal, and a frequency hopped carrier signal modulated with

5   any of the foregoing kinds of signal.

1   37.   (previously presented) Signal processing apparatus according to Claim 35, wherein the

2   pilot signal is one of a two-tone pilot signal and a multi-tone pilot signal.

1   38.   (previously presented) A signal processing apparatus according to Claim 35, wherein

2   the pilot signal is removed from the output of the apparatus by a filter or by the introduction of a pilot

3   cancellation signal.

1   39.   (previously presented) Signal processing apparatus according to Claim 38, wherein the

2   pilot cancellation signal is adjusted using feedback derived from the output of the apparatus.

1   40.   (previously presented) Signal processing apparatus according to Claim 38, wherein the

2   pilot cancellation signal comprises a frequency converted, phase shifted and amplitude adjusted version

3   of the pilot signal.

1   41.   (previously presented) Signal processing apparatus according to Claim 38, wherein a

2   digital signal processor is used to control the pilot cancellation signal using feedback from the output of

3   the signal processing apparatus.

1   42.   (currently amended) Signal processing apparatus according to Claim 38, further

2   comprising a suppressor for cancelling signals which are images of the pilot signal.

1   43.   (previously presented) Signal processing apparatus according to Claim 33, wherein a

2   digital signal processor is used to control the correction signal using feedback from the output of the

3   signal processing apparatus.

1   44.   (previously presented) Signal processing apparatus according to Claim 33, wherein the

2   lineariser comprises a distortion generator for producing the correction signal from the output signal of

3   whichever of the amplifier and the frequency converter precedes it,

1   45.   (previously presented) Signal processing apparatus according to Claim 44, wherein the

2   distortion generator comprises a non-linearity generator.

1   46.   (previously presented) Signal processing apparatus according to Claim 45, wherein the

2   non linearity generator uses at least one of anti-parallel diodes, a FET channel, dual gate GaAsFETs

3   operating close to pinch-off, Shottky diodes, mixers and multipliers in the non-linearity generating

4   process.

1   47.   (previously presented) Signal processing apparatus according to Claim 46, wherein the

2   non linearity generator is arranged to generate the non-linearity by mixing its input signal with itself one

3   or more times to produce the non-linearity.

1   48.   (previously presented) Signal processing apparatus according to Claim 47, wherein the

2   non linearity generator is arranged to generate a third order non-linearity by mixing the input to the

3   non-linearity generator with itself and then with its input.

1   49.   (previously presented) Signal processing apparatus according to Claim 47, wherein

2   components of the non-linearity are generated and controlled separately.

1   50.   (previously presented) Signal processing apparatus according to Claim 49, wherein

2   in-phase and quadrature signals are produced from each separately generated non-linearity component

3   and are controlled separately.

1   51.   (previously presented) Signal processing apparatus according to Claim 33, wherein the

2   frequency converter comprises a mixer for mixing a mixing signal into a received signal destined to be

3   frequency converted.

1   52.   (previously presented) Signal processing apparatus according to Claim 33, wherein the

2   frequency converter is an upconverter for converting an intermediate frequency band signal into a radio

3   frequency band signal.

1   53.   (previously presented) Signal processing apparatus according to Claim 52, wherein the

2   frequency converter comprises in-phase and quadrature signal paths for handling in-phase and quadrature

3   signals representing a signal at the intermediate frequency band, wherein there is a separate,

4   independently controlled, lineariser operating on each of these signal paths.

1   54.   (previously presented) Signal processing apparatus according to Claim 33, wherein the

2   frequency converter is a downconverter for converting a radio frequency band signal into an intermediate

3   frequency band signal.

1   55.   (previously presented) Signal processing apparatus according to Claim 54, wherein the

2   frequency converter comprises in-phase and quadrature signal paths for handling in-phase and quadrature

3   signals representing a signal at the intermediate frequency band, wherein there is a separate,

4   independently controlled, lineariser operating on each of these signal paths.

1   56.   (previously presented) Signal processing apparatus according to Claim 33, wherein the

2   input signal is a CDMA signal.

1   57.   (previously presented) A method of processing an input signal to produce an output

2   signal, the method comprising the steps of signal amplification and frequency conversion, and the step of

3   introducing, between the steps of amplification and frequency conversion, a correction signal that is

4   adapted to make the overall input and output characteristic of the signal processing method more linear

5   by linearising both the amplification and frequency conversion.

1   58.   (previously presented) A method according to Claim 57, comprising the step of using a

2   feedback signal derived from the output signal of the signal processing method to adapt the correction

3   signal.

1   59.   (previously presented) A method according to Claim 58, further comprising the step of

2   introducing a pilot signal into the input signal prior to frequency conversion and amplification, wherein

3   the feedback signal contains distortion components from the pilot signal produced by at least one of the

4   frequency conversion and amplification steps.

1   60.   (previously presented) A method according to Claim 59, further comprising the step of

2   removing the pilot signal from the output signal of the method by filtering or by introducing a pilot

3   cancellation signal.

1   61.   (previously presented) A method according to Claim 60, comprising the step of

2   adjusting the pilot cancellation signal using feedback derived from the output signal of the signal

3   processing method.

1   62.   (previously presented) A method according to Claim 57, wherein the correction signal is

2   produced by a step of distorting the signal produced by whichever of the amplifying and frequency

3   conversion steps precedes it.

1   63.   (previously presented) A method according to Claim 62, wherein the step of distortion

2   generation comprises the step of generating and controlling non-linearity components independently.

1   64.   (previously presented) A method according to Claim 57, wherein the input signal is a

2   CDMA signal.